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NELSON MULLINS RILEY & SCARBOROUGH, LLP 1320 MAIN STREET, 17TH FLOOR COLUMBIA, SC 29201			PRYOR, ALTON NATHANIEL	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* STEPHEN BRIAN FALDER and DAVID RAWDEN

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Appeal 2009-004915  
Application 10/039,677  
Technology Center 1600

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Decided:<sup>1</sup> July 31, 2009

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Before TONI R. SCHEINER, ERIC GRIMES and STEPHEN WALSH,  
*Administrative Patent Judges.*

WALSH, *Administrative Patent Judge.*

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134(a) involving claims to an anti-microbial composition. The Patent Examiner rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

### STATEMENT OF THE CASE

The invention “relates to anti-microbial compositions and to formulations including the anti-microbial compositions.” (Spec. 1:3-4.) According to the Specification, an advantage of its anti-microbial composition “is that it is able to prevent a broad range of microorganisms from adhering and attaching to the surface and . . . forming a biofilm.” (*Id.* at 8:19-22.) Claims 1, 46, 52, 53, 61, 62, 70, 71, 78, 82-85, 88-92, 95-100, 105-107, 111-113 and 115-137, which are all the pending claims, are on appeal. Claim 1 is representative and reads as follows:

1. An anti-microbial composition consisting essentially of:
  - (i) at least one anti-microbial agent, wherein at least one of the antimicrobial agents is an anti-microbial agent having a high surface tension of from 20 to 35 mN/m, and is selected from the group consisting of
    - (a) a quarternary ammonium compound having the general formula  $R^1R^2R^3R^4N^+X^-$ , in which one or two of the R groups are alkyl substituted by aryl or interrupted by aryl or oxygen and the other R groups are the same or different and are C<sub>1</sub> to C<sub>4</sub> alkyl groups,
    - (b) a dialkyldimethylammonium compound wherein the two non-methyl alkyl groups are selected from alkyl groups comprising from 8 to 12 carbon atoms, and
    - (c) a benzalkonium [sic] halide or an aryl ring substituted benzalkonium halide,
  - (ii) at least one compound having a low surface tension of from 8 to 14 mN/m, and selected from the group consisting of silanes, soya lecithins, polydimethylsiloxanes, polydimethylhydroxysiloxanes, and mixtures thereof, and
  - (iii) at least one polar solvent, wherein in use the anti-microbial

composition acts substantially to reduce or control the formation of microbial colonies on or at a surface to which the composition is applied.

The Examiner rejected claims 1, 46, 52, 53, 61, 62, 70, 71, 78, 82-85, 88-92, 95-100, 105-107, 111-113 and 115-137 under 35 U.S.C. § 103(a) as unpatentable over Trinh.<sup>2</sup>

## OBVIOUSNESS

### *The Issue*

The Examiner's position is that Trinh taught anti-microbial compositions made with multiple compounds, including Hyamine 1622 (a quaternary ammonium compound covered by part (i)(a) in claim 1), dimethyl polysiloxane (a compound covered by part (ii) in claim 1) and phenolic compounds such as chloroxylenol, and isothiazolinones (polar solvents covered by part (iii) in claim 1). (Ans. 3-4). The Examiner concluded that although Trinh did not describe an example composition having those particular named compounds, such a composition would have been obvious given Trinh's teachings. (Ans. 4.)

Appellants dispute the correctness of the Examiner's findings concerning the scope and content of the prior art. In particular, Appellants contend that Trinh fails to teach or suggest the compound recited in part (ii) of Appellants' claim 1, i.e., "a compound having a low surface tension of from 8 to 14 mN/m, and selected from the group consisting of silanes, soya lecithins, polydimethylsiloxanes, and polydimethylhydroxysiloxanes."

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<sup>2</sup> U.S. Patent No. 6,656,923 B1, issued to Toan Trinh et al., Dec. 2, 2003.

(App. Br. 8-9.)<sup>3</sup> Against the Examiner's contrary finding, Appellants argue that (1) Trinh disclosed using polyalkylene oxide polysiloxanes, not Appellants' structurally different polydimethylsiloxanes (*Id.* at 9-10), and (2) Trinh's polyalkylene oxide polysiloxanes were "water dispersible or water soluble" in contrast to the claimed polydimethylsiloxanes which are said to be "immiscible with water" (*Id.* at 11-12).

The issues with respect to this rejection are:

- was there a nonobvious structural difference between Trinh's polyalkylene oxide polysiloxanes and the polydimethylsiloxanes recited in claim 1(ii);
- was there a significant functional difference between Trinh's polyalkylene oxide polysiloxanes and the polydimethylsiloxanes recited in claim 1(ii); and

if there was a difference, did the Examiner establish a prima facie case for the obviousness of replacing Trinh's polyalkylene oxide polysiloxanes and the polydimethylsiloxanes recited in claim 1(ii)?

*Findings of Fact*

1. Trinh taught a composition that could comprise a cyclodextrin-compatible surfactant providing a low surface tension. (Col. 9, ll. 48-51.)
2. Trinh taught that the surfactant was used in an aqueous solution. (Col. 10, ll. 25-30.)

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<sup>3</sup> Citations are to "Applicant's Substitute Brief On Appeal," filed July 16, 2008.

3. Trinh taught that “polyalkylene oxide polysiloxanes” were preferred surfactants. (Col. 11, ll. 48-50.)
4. Trinh’s polyalkylene oxide polysiloxanes had the formula  $R^1-(CH_3)_2SiO-[ (CH_3)_2SiO]_a-[ (CH_3)(R^1)SiO]_b-Si(CH_3)_2-R^1$  with at least one  $R^1$  being a poly(ethyleneoxide/propyleneoxide) copolymer group. (Col. 11, ll. 54-65.)
5. Trinh taught that example polyalkylene oxide polysiloxanes were commercially available under the brand name Silwet®, from OSi Specialties. (Col. 12, ll. 12-13.)
6. Trinh taught that the polyalkylene oxide polysiloxane must be “water dispersible or water soluble.” (Col. 12, ll. 36-39.)
7. We find that Trinh’s polyalkylene oxide polysiloxane contained at least one polydimethyl siloxane moiety.

#### *Principles of Law*

“The entirety of the evidence must be reviewed in order to determine whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art.” *In re Kumar*, 418 F.3d 1361, 1369 (Fed. Cir. 2005).

#### *Analysis*

Appellants contend that polydimethylsiloxane has a defined meaning in the art. (App. Br. 9, citing *Merck Index*.) Thus, according to Appellants, the art-recognized formula for polydimethylsiloxane said to be from *Merck Index*, is different from the compound Trinh called polyalkylene oxide polysiloxane which also included at least one poly(ethyleneoxide)/

propyleneoxide) copolymer group. (*Id.*) We agree with Appellants that while Trinh's compound contains a polydimethylsiloxane moiety, that does not make Trinh's compound a polydimethylsiloxane according to the ordinary meaning of the term in the art. *See* App. Br. at 9.

As further evidence that the two kinds of siloxane are different, Appellants direct attention to the fact that Trinh taught using commercially available Silwet® surfactants. (App. Br. 12-13) According to Appellants, U.S. Patent No. 5,543,048 states that the Silwet® surfactants “should not be confused with conventional polydimethylsiloxanes because they are composed of a siloxane backbone with organic polyalkylene oxide pendants.” (*Id.*) Given Appellants’ evidence, we find that Trinh’s siloxanes were structurally different from Appellants’ polydimethylsiloxanes.

The Examiner also found that Trinh’s siloxanes were related to Appellants’ compounds as homologs. (Ans. 6.) According to the Examiner, “[i]n the absence of unexpected results homologs are obvious over one another.” (*Id.*) Appellants dispute that the two kinds of compound are homologs. (Reply Br. 2-3, citing *Glossary of Terms Used in Medicinal Chemistry*, and the MANUAL OF PATENT EXAMINING PROCEDURE § 2144.09.) Against that evidence, the Examiner maintains that “the instant siloxanes are similar to Trinh et al.’s siloxanes and therefore the two siloxanes would possess similar properties.” (Ans. 7.)

The authorities do not support the Examiner’s homolog finding, and the evidence rebuts the Examiner’s prediction of similar properties. Appellants provided evidence that Trinh’s surfactant was water soluble (FF6), in contrast to Appellants’ polydimethylsiloxane surfactant which is water immiscible. *See* App. Br. at 11, citing *Merck Index*. Appellants

provided an explanation that the difference in water miscibility is an important feature of the anti-microbial composition – the water immiscible composition blocks the formation of biofilms by microbes. (App. Br. 12.)

We find that the structural and functional differences between Trinh's polyalkylene oxide polysiloxane and Appellants' polydimethylsiloxanes were not properly accounted for in the rejection. Considering the invention as a whole including the structural and functional differences, we conclude that a *prima facie* case of obviousness was not established.

#### CONCLUSIONS OF LAW

There was a structural difference between Trinh's polyalkylene oxide polysiloxanes and the polydimethylsiloxanes recited in claim 1(ii);

there was a significant functional difference in water miscibility between Trinh's polyalkylene oxide polysiloxanes and the polydimethylsiloxanes recited in claim 1(ii); and

the Examiner did not establish a *prima facie* case for the obviousness of replacing Trinh's polyalkylene oxide polysiloxanes with the polydimethylsiloxanes recited in claim 1(ii).

#### SUMMARY

We reverse the rejection of claims 1, 46, 52, 53, 61, 62, 70, 71, 78, 82-85, 88-92, 95-100, 105-107, 111-113 and 115-137 under 35 U.S.C. § 103(a) over Trinh.

Appeal 2009-004915  
Application 10/039,677

REVERSED

Ssc:

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